

Abstract

5 The invention relates to a navigation system for performing and assisting surgical operations, such that the system makes use of an image database for preoperatively prepared nuclear-spin and/or computer tomography data. The system comprises means for extracting anatomical structures from the raw data sets
10 previously obtained from the preoperative images and for making these structures available in the form of visualizable 3D data sets. The system further comprises means for generating a specified constant magnetic field in the navigation environment as well as a pointer navigation instrument with an integral
15 magnetic-field sensor, such that the magnetic-field sensor and the constant-field transmitter form a tracking device. The system includes a menu-guided control facility, wherein by movements of the pointer navigation instrument outside the operation field but within the navigation environment, i.e. in
20 a control field, displayed menus or control measures can be activated or deactivated. The invention also includes a special marking device or fiducial represented during the generation of image data and serving to detect the position of a subject and assign coordinates for surgical operations, as well as a
25 pointer for the tracking device of the navigation system with a sensor specially disposed in a housing and connected to a contact tip.